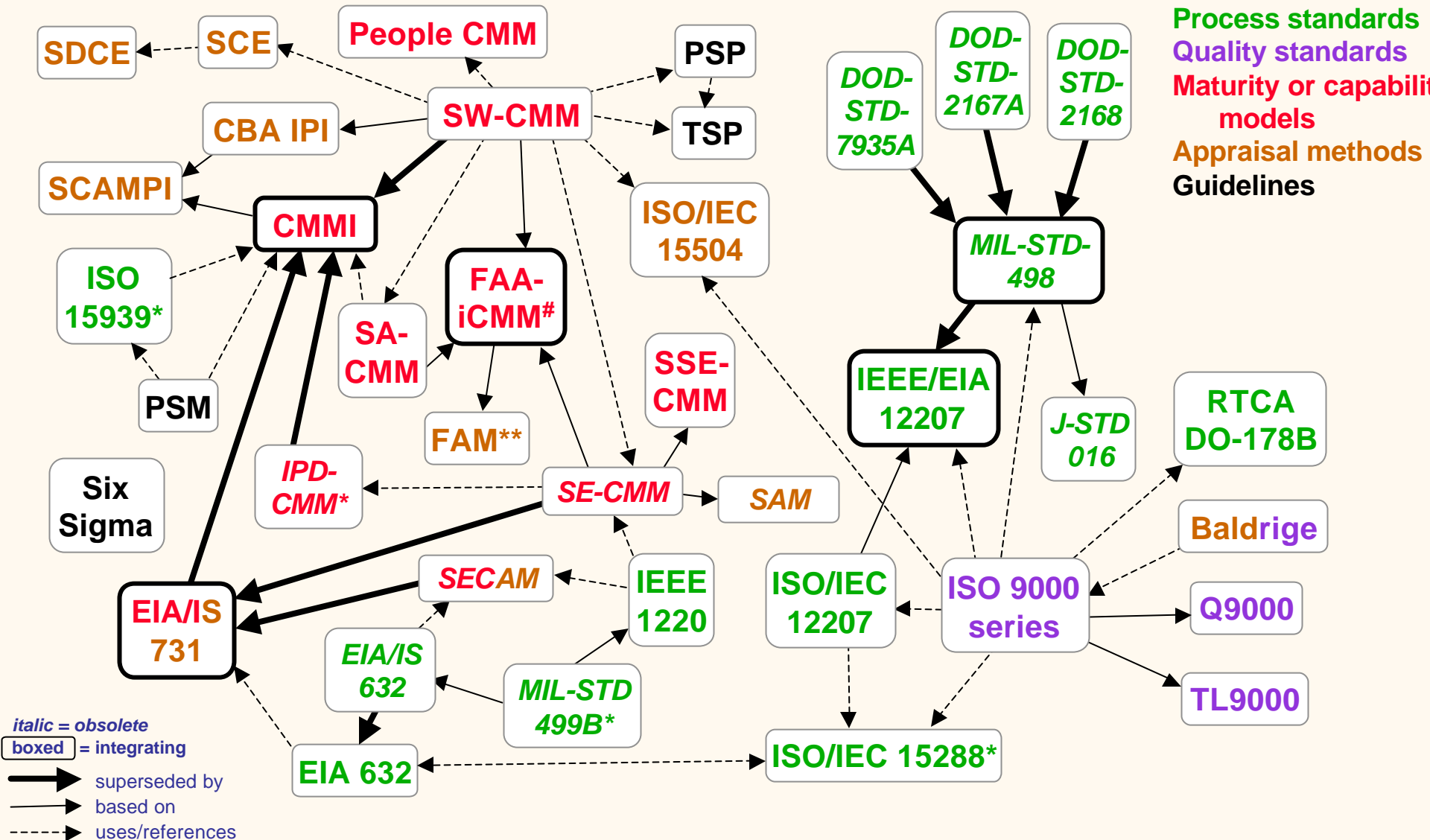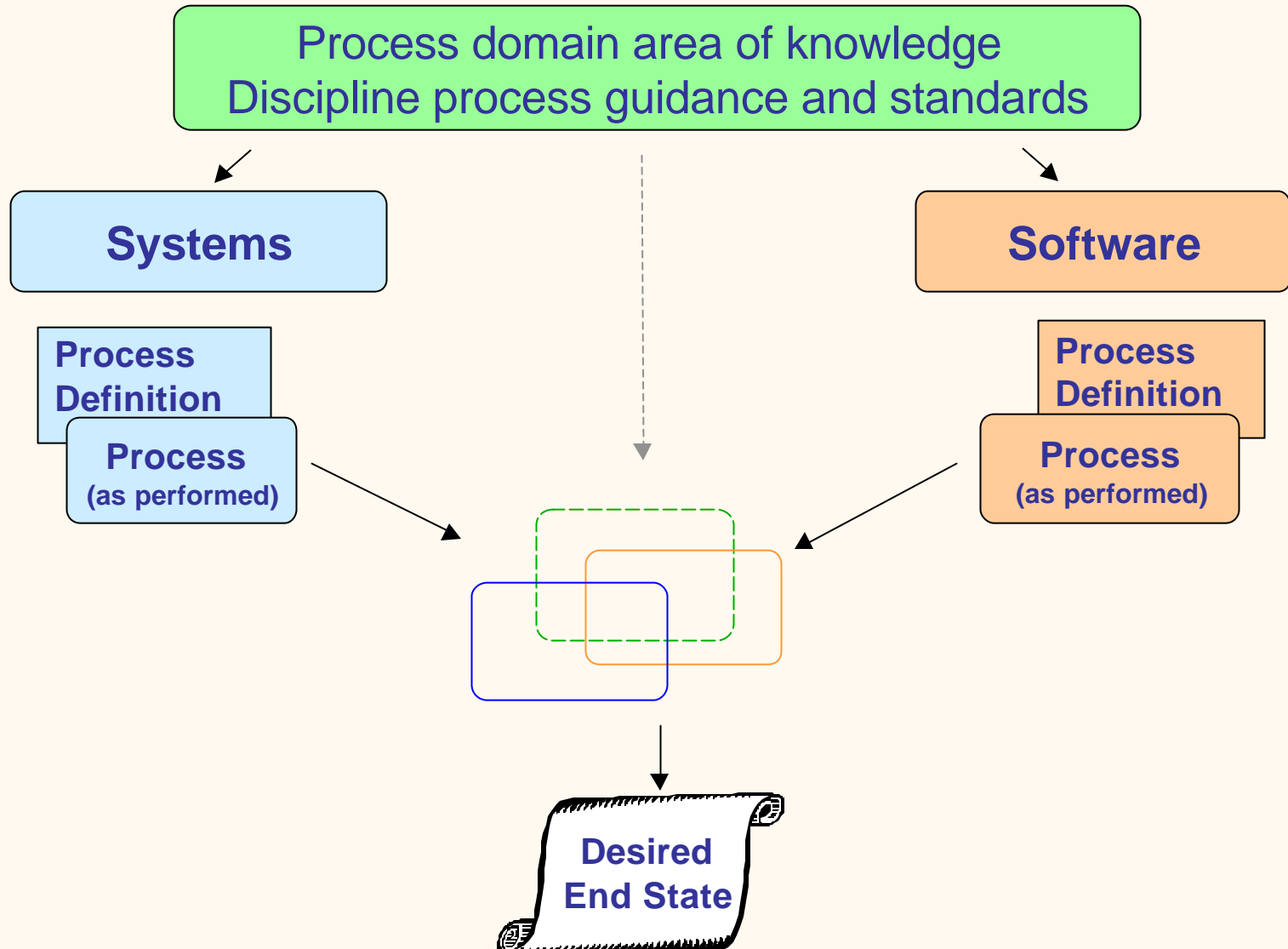# *Unintended Consequences of CMMI*

Jim Armstrong
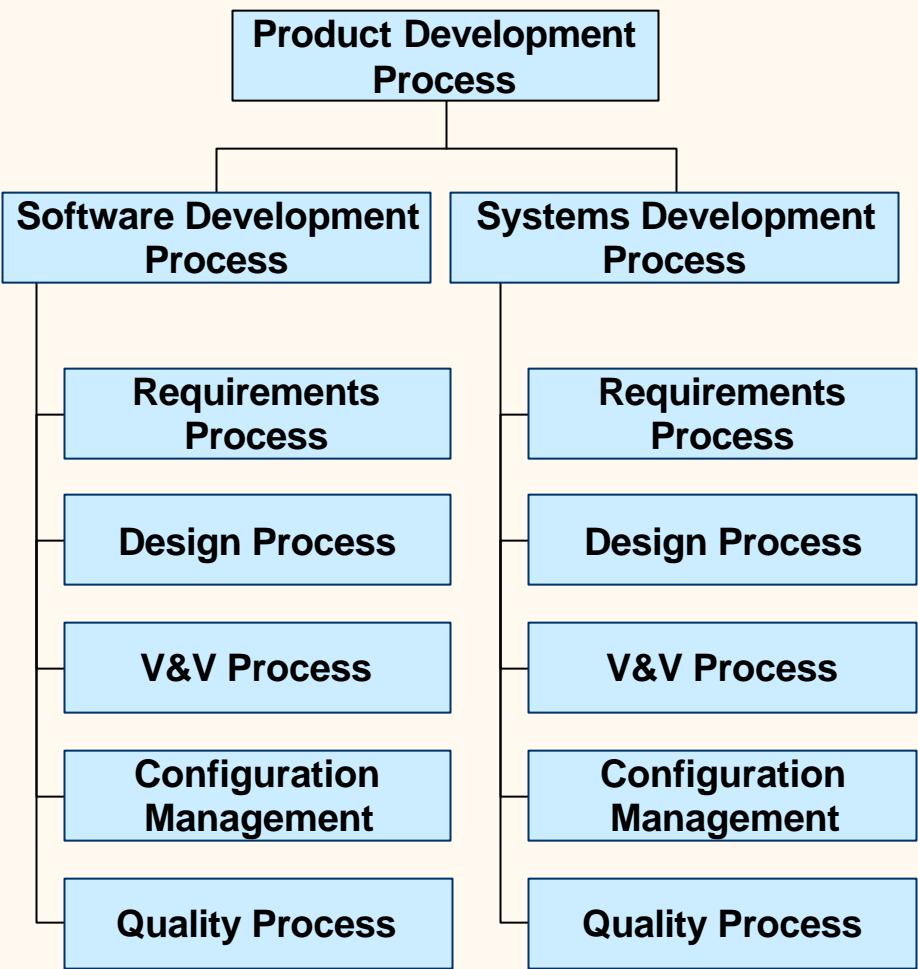
Software Productivity Consortium

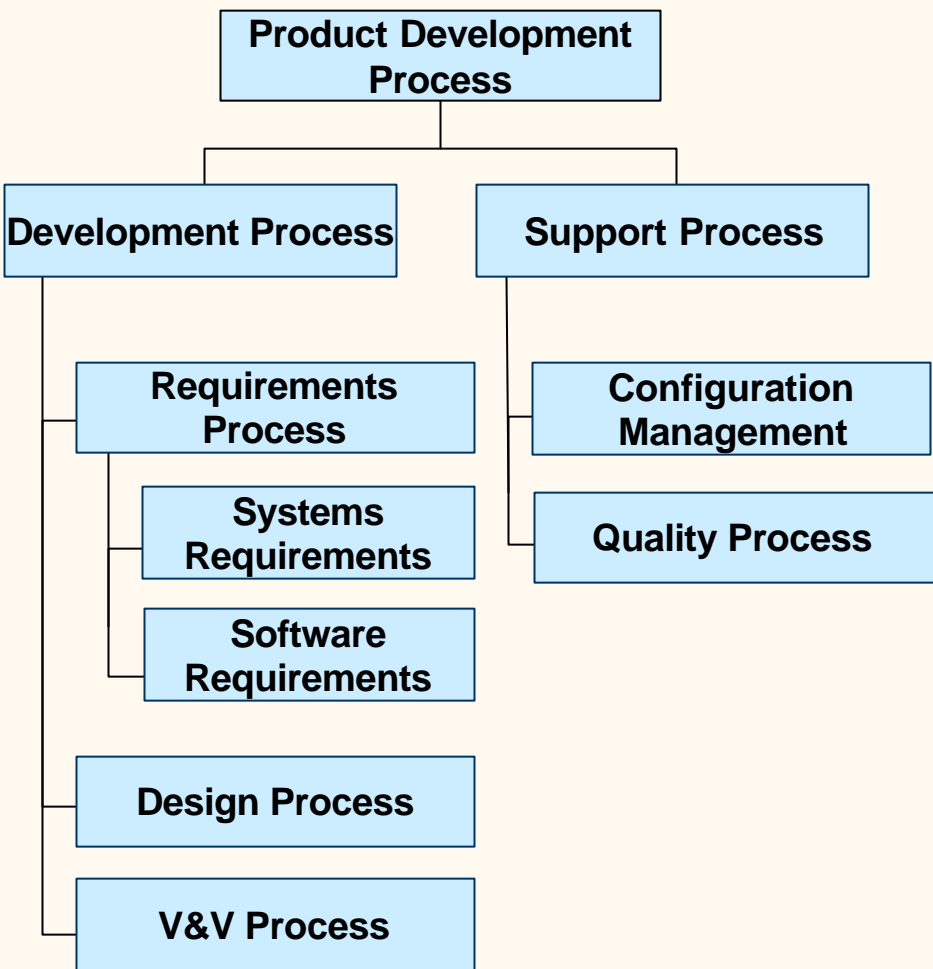**November 14, 2001**

The Frameworks Quagmire

Process standards
Quality standards
Maturity or capability models
Appraisal methods
Guidelines

SDCE

SCE

People CMM

PSP

TSP

SW-CMM

CBA IPI

SCAMPI

CMMI

ISO 15939*

PSM

Six Sigma

SA-CMM

FAA-iCMM#

FAM**

IPD-CMM*

EIA/IS 731

ISO/IEC 15504

SSE-CMM

SE-CMM

SAM

SECAM

IEEE 1220

EIA/IS 632

MIL-STD 499B*

EIA 632

DOD-STD-7935A

DOD-STD-2167A

DOD-STD-2168

MIL-STD-498

IEEE/EIA 12207

J-STD 016

RTCA DO-178B

Baldrige

ISO/IEC 12207

ISO 9000 series

ISO/IEC 15288*

Q9000

TL9000

italic = obsolete
boxed = integrating

⟶ superseded by
→ based on
--→ uses/references

See *www.software.org/quagmire*

Process domain area of knowledge
Discipline process guidance and standards

Systems

Software

Process Definition

Process (as performed)

Process Definition

Process (as performed)

Desired End State

Process Architecture Issues

Structuring by Function

```
                Product Development
                      Process
                          |
          ┌───────────────┴───────────────┐
  Software Development        Systems Development
       Process                    Process
```

Software Development Process	Systems Development Process
Requirements Process	Requirements Process
Design Process	Design Process
V&V Process	V&V Process
Configuration Management	Configuration Management
Quality Process	Quality Process

Structuring by Activity

```
                Product Development
                      Process
                          |
          ┌───────────────┴───────────────┐
    Development Process            Support Process
```

Development Process
- Requirements Process
  - Systems Requirements
  - Software Requirements
- Design Process
- V&V Process

Support Process
- Configuration Management
- Quality Process

ETVX Process Definition

Policy　　Standards　　Procedures　　Plans　　Constraints

Controls

Process Element

Input

Entry Criteria　　Tasks　　Exit Criteria

Validation

Output

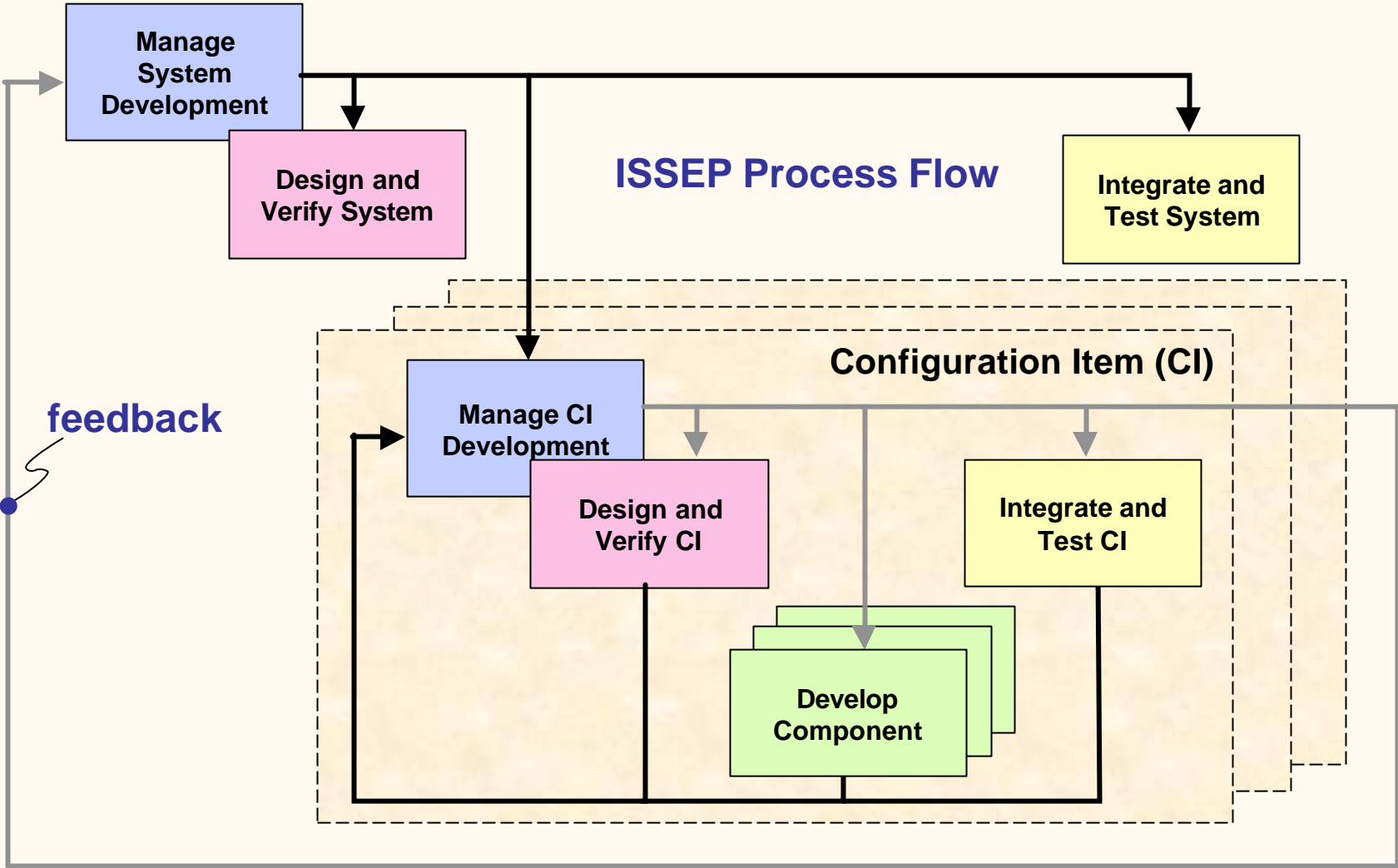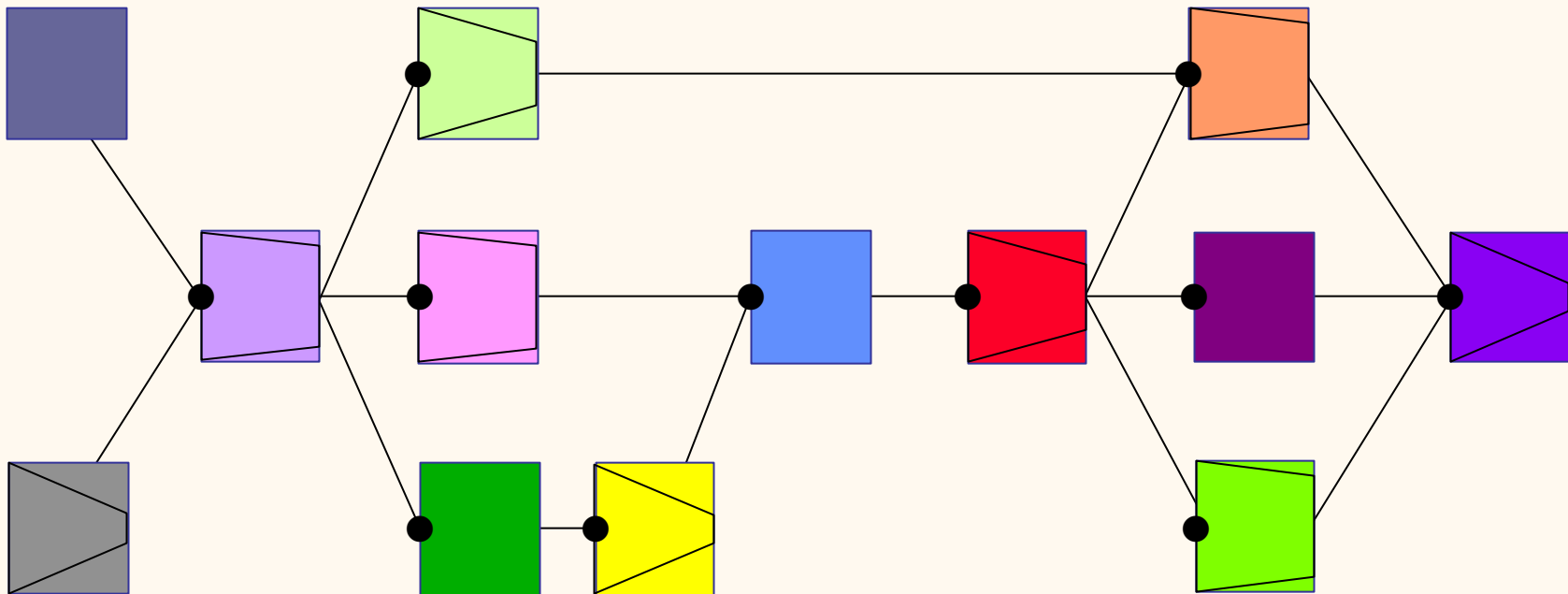Mechanisms

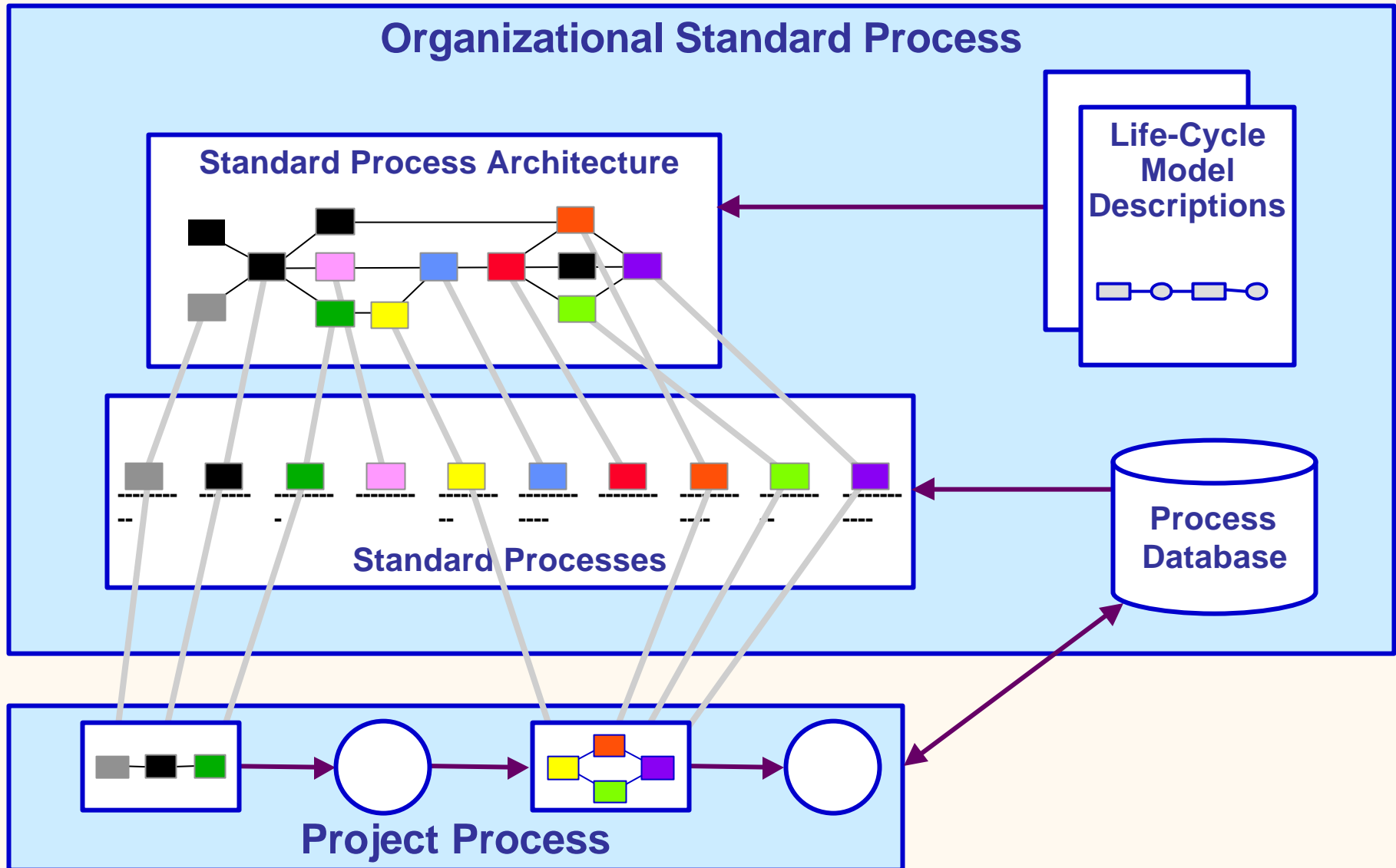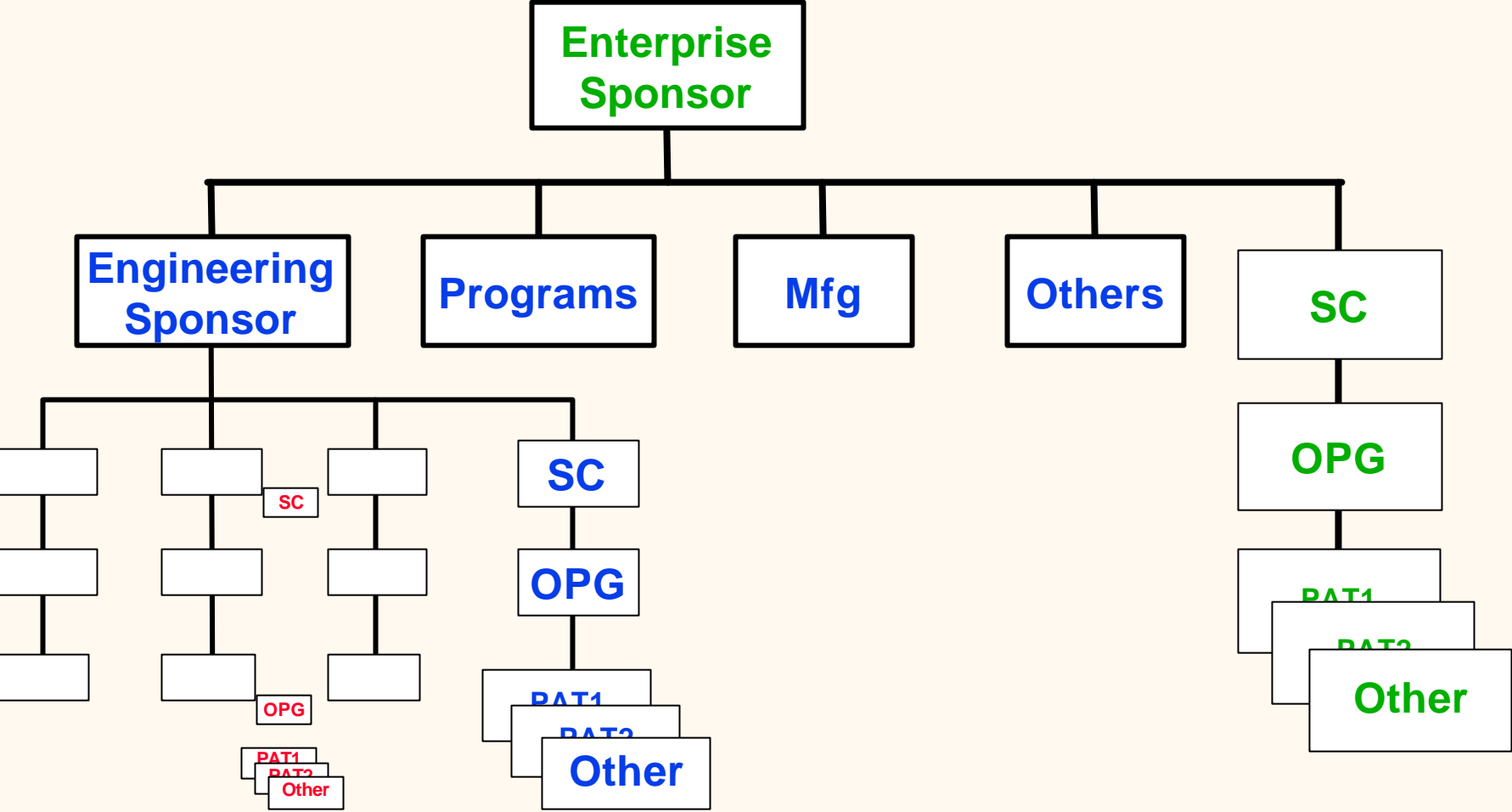Roles & Responsibilities　　Method & Measurement　　Tools　　Trained Staff

The Consortium's Integrated Systems and Software Engineering Process can help you ensure an architecture contains a minimal and necessary set of processes

Enterprise-wide infrastructure

Baldrige

SW-CMM

6 Sigma

TOC

CMMI

PM

P-CMM

Lean

731

SA-CMM

ISO

Others

Three key CMMI impacts

- **Process architecture critical**

- **Enterprise view apparent**

- **Process Improvement Integration needed**